



J Wolf del. et lith

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PHOLIDOTUS AFRICANUS



J. Wolf del et lith

M & N Hanhart imp

DASYPUS VELLEROSUS



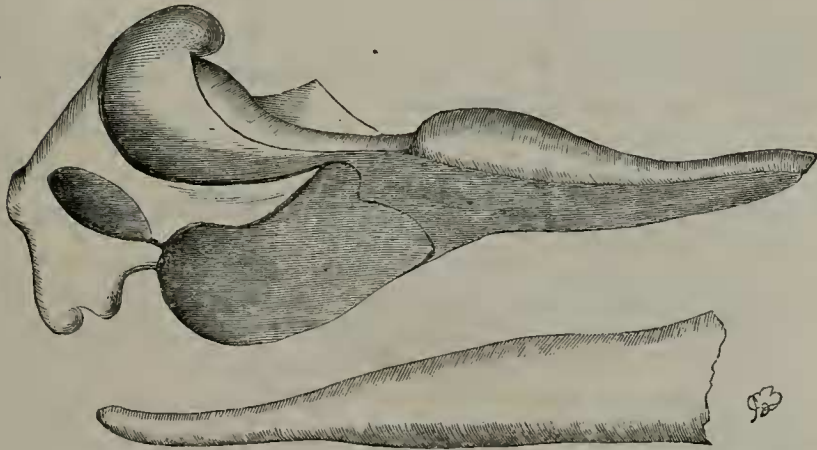
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There is a partial hollow, as if it were the cavity of an old tooth that had fallen out, on the margin of the inner jaw, behind the base of the elongated arched tooth.

"In your letter you sent me a sketch of the skull of *Ziphius indicus* with two teeth in the front of the lower jaw, and a short stumpy head, totally unlike the skull of *Ziphius* figured in the 'Catalogue of Cetacea.'"

"There is a skull in the South African Museum which I have got down as a *Globiocephalus*. It is the skull of a very old animal without teeth; but I think I can trace that it has had two front teeth in the lower jaw, if not also along (the edge of) the upper and lower jaw. The animal was taken on our coast."

The figures of the skull which accompany this note appear to me to represent the skull of a species of *Hyperoodon*, which differs from *Hyperoodon* of Europe in having only a low crest on each side of the maxillary bones. I would propose to designate the species *Hyperoodon capensis*.



Skull and lower jaw of *Hyperoodon capensis*.

The length of the skull, from the end of the rostrum to the occipital condyle, is 3 feet; the height of the skull, from the crest of the blower to the condyle, 2 feet; the greatest width of the brain-case 1 foot 7 inches.

4. REVISION OF THE GENERA AND SPECIES OF ENTOMOPHAGOUS EDENTATA, FOUNDED ON THE EXAMINATION OF THE SPECIMENS IN THE BRITISH MUSEUM. BY DR. JOHN E. GRAY, F.R.S.

(Plates XVII., XVIII., XIX.)

The species of this family of animals have been so well described by Cuvier, Sundevall, Lund, Burmeister, and others, that I have only

one or two new species to describe. I have attempted to arrange the genera, especially of the *Dasypodinae*, in more natural groups.

The osteological characters have been well studied by Cuvier, De Blainville, Owen, Rapp, Turner, and others.

I have figured the skulls of a few species which have not before been published.

Section EDENTATA ENTOMOPHAGA.

Grinders rootless. Canines sometimes entirely wanting; if present, like the grinders. Face elongate; mouth mostly small. Body armed with scales, spines, or rigid hairs. Limbs short and strong, hinder ones longest. Stomach simple; malar bone simple or wanting.

Dasypidæ, Gray, Ann. Phil. 1825; Cat. Mamm. B. M. 188.

Effodientia, Baird, N. A. Mamm. 621.

Insektenfressende Edentaten, Rapp, Edent.

Division 1. CATAPHRACTA.

Body covered with scales, or with an external armour divided into rings or bands, generally revolute.

Fam. 1. MANIDIDÆ.

Body covered with scales. Tail expauded. Claws of feet bent on the sides in walking.

1. **MANIS.** Upper part of fore feet hairy, without any scales. Tail very long, slender. Scales elongate, narrow, keeled; central series of caudal scales continued to the end.
2. **PHOLIDOTUS.** Upper part of fore and hind feet covered with scales to the toes. Scales broad, short. Tail moderate, tapering; central series of caudal scales continued to the end.
3. **SMUTSIA.** Upper part of fore and hind feet covered with scales to the toes. Scales broad, short. Tail moderate, very broad to the end; central series of caudal scales not continued to the end.

Fam. 2. DASYPODIDÆ.

The body covered with a bony convolute armour, formed of tesserae.

Tribe 1. DASYPODINA. The dorsal disk closely attached to the back of the animal, divided in the middle into three parts by free rings separating the scapular and pelvic shields; pelvis free from the pelvic shield; scapular or pelvic shield moderate; central rings many; feet strong; hind toes free; claws large. Skull not soldered to the frontal shield. Tail elongate. **PELTOCHLAMYDES.**

A. Digitigrade. *Backs of feet round, covered with plates; toes of the front and hind feet separate; claws conical. Head elongate; ears close together.* Chærochlamydes.

4. TATUSIA. Toes 5/4. Tail with rings of plates.

B. Plantigrade. *Soles of feet flat, callous, with a prominent heel; toes of fore feet united to the claws, compressed; claws compressed, sharp-edged below. Toes of hind feet separate; claws elongate. Head broad; ears far apart.* Platychlamydes.

* *Head conical. Teeth many, small.*

5. PRIONODOS. Toes 5/5; middle front very large; outer front toes very small. Intermaxillary toothless. Four front bands of tesserae of the scapular shield partially free.

** *Head flat, conical. Teeth few, nine or ten, large; intermaxillary with one tooth on each side.*

6. DASYPUS. Tail round at the base, tesserae convex. Marginal plates of the dorsal disk small; nuchal band linear, broad to the end; first band of plates of the scapular shield fixed like the rest.

*** *Head broad, conical. Teeth few, nine or ten, large; intermaxillary toothless.*

7. EUPHRACTUS. Tail ringed at the base; tesserae convex. Marginal plates of the dorsal disk falcate; nuchal band narrow at the sides; first band of the scapular disk more or less free.

8. XENURUS. Tail nakedish, with sunken shields.

Tribe 2. TOLYPEUTINA. Scapular and pelvic shields large, convex; central rings three, only attached to the middle of the back, which is covered with hair on the sides under the shield. Feet weak; front with elongated unequal claws, on the tip of which the animal walks; hinder feet clavate, with flat ovate nails; hind part of feet rounded, shielded. Skull attached to the frontal shield. Tail short. SPHÆROCHLAMYDES.

9. TOLYPEUTES.

Tribe 3. CLAMYDOPHORINA. The dorsal disk divided behind into a dorsal and a pelvic shield. The pelvic shield agglutinated to the pelvis. Feet strong; toes united; claws large.

10. CHLAMYDOPHORUS. The dorsal shield only attached by the middle of the back, which is covered with hair on the sides.

11. BURMEISTERIA. The dorsal shield attached to the skin to its edge.

Division 2.

Body covered with hairs or spines, not with scales or armour.

Fam. 3. ORYCTEROPODIDÆ.

Body covered with bristles. Head conical; mouth small.

12. ORYCTEROPUS.

Fam. 4. MYRMECOPHAGIDÆ.

Body covered with hair. Head conical; mouth small.

* *Terrestrial. Tail bristly. Teeth 5.*

13. MYRMECOPHAGA. Tail covered with long hair.

** *Arboreal. Tail conical, prehensile.*

14. TAMANDUA. Teeth $5/4$, covered with short hair.15. CYCLOTHURUS. Teeth $2/5$, covered with silky hair.

Fam. 5. ORNITHORHYNCHIDÆ.

Body covered with hair or spines. Mouth in the form of a flat or cylindrical beak. Hind feet of males spurred.

16. PLATYPUS. Head depressed. Body covered with fur. Feet expanded, webbed.

17. ECHIDNA. Head slender, conical, tapering. Body covered with spines. Feet with long claws.

Division 1. CATAPHRACTA.

Body covered with scales, or with an external armour divided into ring bands, revolute.

Fam. 1. MANIDIDÆ.

Body covered with scales. Tail flat, expanded. Toes bent up. Walking on the outer side of the feet. Fossorial; slow; forming a globe when contracted. (*Osteology*.—See Cuv. Oss. Foss. v. 99; Sundevall, Kong. Vet. Akad. Hand. 1842, p. 274; Turner, P. Z. S. 1851, p. 219.)

Manina, Gray, Cat. Mamm. B. M. 188.

Manidæ, Turner, l. c. 1851, p. 219.

Vermilinguia, Giebel, Säugeth. p. 394.

Cuvier only knew of two species, the long- and the short-tailed (see Oss. Foss. v. 98).

Dr. Sundevall, in the 'Kongl. Vetensk. Akad. Handlingar' for 1842, p. 245, has published an excellent essay on the species, the anatomy and the history of the genus. This essay is nearly reproduced by M. Ad. Focillon, 'Rev. Zool.' 1850, pp. 465 & 513.

Rafinesque has described a species under the name of *M. cæonyx*, because he believed it had a bifid claw; but he seems to have mistaken the bone that bears the claw, which in all the species is bifid, for the claw.

1. MANIS.

The upper surface of the fore feet hairy, without any scales. Scales of the body slender, oblong, with nearly parallel striæ. Tail much longer than the body, narrow. The central series of caudal scales continued to the end. Claws compressed; the first or outer claw of each foot very small, retracted behind. Africa.

Manis, § 1, Sundevall, *l. c.* 251.

The nose bald; the side of the face, chin, underside of the body, the upper surface of the hands and wrist without scales, and covered with short hair; the conch of the ear not developed.

* *Scales of the body dark brown, in eleven series.* Manis.

1. MANIS LONGICAUDA. Pangolin. B.M.

Dark brown; hair of face and underside of body black. Scales of the body in eleven series; end rounded, with a central prominence. Tail very long. Body and head 11, tail 24 inches.

Manis tetradactyla, Linn. S. N. i. 53; Fischer, Syn. 394; Gray, Cat. Mamm. B. M. 188; Turner, P. Z. S. 1851, p. 220.

M. macroura, Erxl. Syst. 101.

Var.? *M. africana*, Desm. Mamm. 376.

M. longicauda, Geoff., Sundevall, *l. c.* 251.

Pholidotus longicaudatus, Briss. R. A. 31.

M. longicauda β, Sundevall.

M. longicaudata, Rapp, Edent. 15; Shaw, Zool. i. 180, t. 55.

Pangolin d'Afrique, Cuv. Oss. Foss. v. 98.

Hab. Africa: Guinea, Gaboon.

** *Scales of body horn-coloured, in twenty-one series.* Phatagin.

2. MANIS TRICUSPIS. Phatagin. B.M.

Pale brown; hair of face and underside of body grey; scales of the body in twenty-one series, truncated, with a central prominence, often appearing three-pointed. Body 12, tail 18 inches.

Phatagin, Buffon.

Manis tricuspis, Rafinesque, Ann. Gén. Sci. Phys. de Bruxelles, vii. 214; Sundevall, *l. c.* 1841, p. 252; Rapp, Edent. 15.

M. multiscutata, Gray, P. Z. S. 1843; Cat. Mamm. B. M. 188; Fraser, P. Z. S. 1843; Zool. Typ. 15; Turner, P. Z. S. 1851, p. 220.

M. 4-dactylus, Thompson, P. Z. S. 1834, p. 28.

M. tridentata, Focillon, Rev. de Zool. 1850, t. 1; Rapp, Edent. 16, t. 2 a. (B.M.)

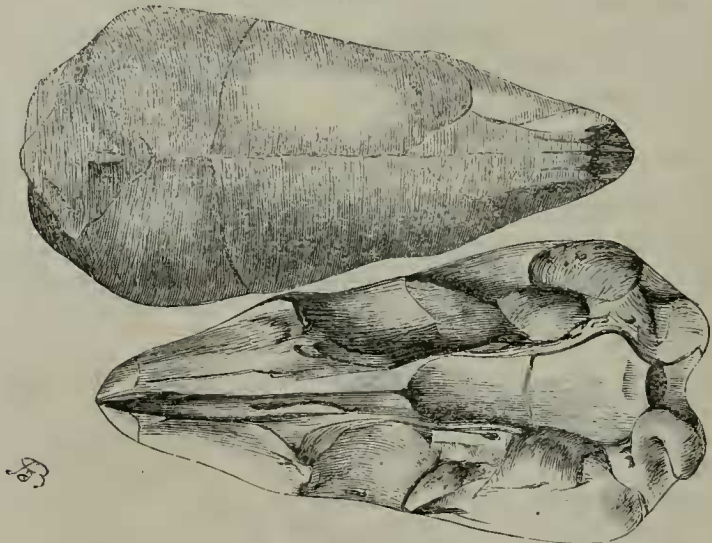
Hab. West Africa; Fernando Po (*Fraser*); Guinea; Sierra Leone (*Thompson*). Skeleton and skull (B.M.).

The face of the skull, from the front of the orbit, is rather more than half the length of the brain-case.

A specimen of this species in spirits in the British Museum has the nose produced, conical, bald, smooth, with three series of plates on the front of the forehead, commencing about halfway between the tip of the nose and the eyes. The nostrils are lateral, covered with a well-developed flap. The cheeks and orbits with scattered, short, black hairs, like the hairs on the back of the hand and wrist. Ears without any external conch. The underside of the body with scattered, very short, rigid hairs. The skin of the back between the scales bald. The scales elongate, with straight sides for two-thirds of their length, then contracted, with rather concave sides, with two deep broad notches on each side of the tip, forming three more or less distinct projections, the middle one being the most produced. Soles of fore and hind feet bald and callous, covered with a hard skin, which peels off in spirits. Toes 5/5; the front inner small; the fifth, second, and then the fourth larger; the middle or third largest: hinder inner small, the outer larger; the second and fourth larger, and the third rather larger still, but not so much larger as in the front foot. The upper part of the fore feet and wrist unarmed, and covered with short, scattered hairs. The hind feet covered with scales nearly to the claws, and hairy on the sides and at the base of the claws.

Professor Rapp separates the specimens from Fernando Po as a species, because in the latter the tail is shorter and all the scales are tricuspid; but the specimens from West Africa vary in the length of the tail, and in perfect specimens all the scales are tricuspid.

Fig. 1.



Skull of *Manis tricuspis* (separate).

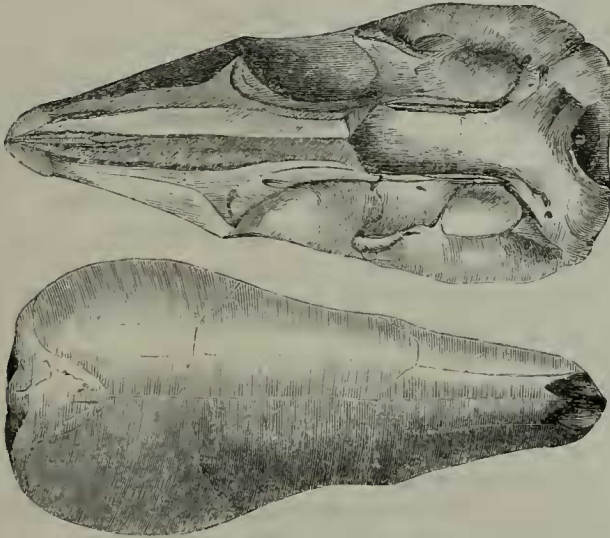
In the British Museum there are a skull and a complete skeleton

which were extracted from the skins of two animals from West Africa, which are so very much alike in form, and in the number and form of the scales and the length of tail, that I should have referred them without doubt to the same species. The skulls, however, are so exceedingly unlike that I believe they might be considered to belong to two species, unless the differences arise from a difference of sex, which the state of the specimens does not allow me to determine.

The separate skull (fig. 1) is very ventricose, thin, light, and showing the sutures.

The skull belonging to the complete skeleton (fig. 2) is smaller, narrower, more conical, solid, and with the suture much less distinctly visible.

Fig. 2.



Skull of *Manis tricuspis* (from the skeleton).

A fœtus of this species, 10 inches long, was noticed by Mr. Thompson under the name of *M. tetradactylus* (Proc. Zool. Soc. 1834, p. 28).

2. PHOLIDOTUS.

The fore and hind feet entirely covered with keeled scales; the internal claw of the fore foot nearly equal to the outer one, and not retracted behind. Scales of the body broad, short. Tail moderate, tapering at the end; the central series of caudal scales continued to the tip.

Hab. India and Asiatic Islands.

Manis, β . *Pholidotus*, Sundevall, *l.c.* 253; Rapp, *Edent.* t. 6. f. 1, 2.

* Scales dark brown, in seventeen longitudinal series; the three or four series on each side shorter, keeled. Tail as long as body and head. Face of skull elongate, nearly as long as brain-case.

1. PHOLIDOTUS JAVANUS.

B.M.

Dark brown; tail as long as body and head; scales of the sides and of the hind feet acutely keeled, the front and hinder claws nearly equal-sized. Head and body 15, tail 15 inches.

Manis pentadactyla, Raffles, Linn. Trans. xiii. 249.

M. javanica (partly), Fischer, Syn. 400 (not of Sundevall).

M. aspera, Sundevall, *l. c.* 253; Rapp, Edent. t. 2a (good), t. 6. f. 1, 2 (skull); Desm. Mamm. 377; Gerrard, Cat. Bones B. M. 285.

Hab. Sumatra (*Raffles*). Male and female (B. M.).

Teats two, pectoral; penis pendant.

Manis aspera is described from a single specimen in the Paris Museum, sent from Sumatra. It is evidently the same as that which Raffles described and figured under the name *M. javanica*, and which has been so named in the English Museums.

The *M. javanica* of Dr. Sundevall, which he described as having fulvescent scales, is the same as his *M. dalmanni* and the *M. aurita* of Hodgson, which is common in India, and has been generally confounded with the larger-scaled *M. pentadactyla* or *M. laticauda*.

Desmarest describes, under the name of *M. javanica*, the Java animal with keeled scales on the legs, and refers to Raffles.

Manis guy, Focillon, Rev. Zool. 1850, t. 10; Rapp, Edent. 17.

"Tail shorter than the body and head; twenty-one longitudinal rows of scales; end of the tail naked on its lower surface; scales broad, ending in an obtuse point, striated to the tip; with bristles between the scales."

Described and figured from a young specimen preserved in spirit, said to have been received from Africa. Appears to me to be only a young specimen of *Pholidotus javanicus*.

The front feet are covered with scales to the claws, and it has the conch of ear moderately developed, not so much so as in *P. dalmanni*.

What is *Manis leucura*, Blyth, Journ. Asiat. Soc. Beng. xxx. 91; Rapp, Edent. 18, thus described, "Tail as long as the body and head; scales of the tail adpressed, so that the margin is entire, not dentated."? The habitat is unknown.

** *Scales horn-coloured; of the back, in seventeen longitudinal series.*
Tail as long as the body. Conch of ear produced.

2. PHOLIDOTUS DALMANNII.

Pale brown; tail short, as long as the body without the head; scales of the young striated, of the middle of back truncated, of the sides of hind feet keeled; of the older specimen worn smooth; ears large; hair of head and underside of body short, grey. Body and head 22, tail 15 inches.

Manis, Dalmann, Act. Stockh. 1749, p. 265, t. 6.

Manis, Förster, Act. Berol. 1789 (printed 1793), p. 90, t. 5, 6; Sundevall, *l. c.* 262, 269.

Manis dalmannii, Sundevall, *l. c.* 256, t. 4 a. f. 10 (toe-bones), 1842; Rapp, Edent. 17.

M. aurita, Hodgson.

M. pentadactyla (partly), Gerrard, Cat. Bones B. M. 285.

M. javanica, Sundevall, *l. c.* 254, t. 4a. f. 11; Turner, P. Z. S. 1851, p. 219?

Pangolin, Buffon, x. t. 34.

Hab. India, Himalaya (*Hodgson*); China (*Dalmann*); ?Java (*Sundevall*).

A small specimen of the species, preserved in spirits in the British Museum, may be thus described:—The head ovate, convex above and on the sides. The end of the nose, the side of the face, including the orbit, to the back of the ears, the throat, underside of the body, and the inside of the legs bald, with a few very slender, elongated hairs on the front of the chin. The forehead with one scale, and five series of scales behind it. The ears large, with a well-developed, oblong, nearly flat conch behind; an oblong prominence for a tragus in front of the small auditory aperture. The fore and hind legs covered with series of scales down to the base of the toes; the toes united to the claws. The palms of the fore feet and the soles of the hind feet hard, callous, well developed. The fore feet with five elongated conical claws, which are strongly inflexed on both palms; the inner and outer small, then the second and fourth, and the centre or third the largest. The hind feet with five short, conical, compressed claws; the inner and outer small, the three middle larger, the middle one being rather the largest. The skin of the back, between the bases of the scales, bald; the lower part of the scales and the middle of the scales striated. The tongue elongate, exsertile, flat, linear, tapering to the tip, which is rounded. The eyelids soft, distinct, not ciliated, but the outer surface entirely covered with very short bristles.

Professor Sundevall, in his Monograph, places considerable reliance on the form of the claws, and on the comparative size and form of the claws of the fore and hind feet, as a specific distinction. The specimens which I have examined from the same locality seem to differ very much in this respect.

Manis dalmannii was described from specimens from China, which looked like the young of *M. laticauda*. It is probably the same as the many-scaled species from India, or at least must be very nearly allied to it, more especially as the large size of the ears, which caused Hodgson to call it *M. aurita*, is mentioned.

Dr. Sundevall states that his *M. javanica* is from Java, and he believes that it is common there; but he describes all the scales as fulvescent. I have never seen any Javan or Sumatran specimen of that colour. They are always dark brown, while the Indian species is always pale-coloured; and I am inclined to believe that it must have been the Indian species that was described.

There are two skulls of this species in the British Museum, received from Mr. Hodgson as belonging to his *M. aurita*; they are very solid, considerably stouter in proportion to their length than the skull of *M. indica* figured by Cuvier, and they have very broad nasal bones, which are rounded at the hinder end.

Professor Sundevall seems inclined to believe that the skeleton of *Pangolin à courte queue*, or, as he quotes it, "*Pangolin des Indes*," figured and described by Cuvier in the 'Ossements Fossiles,' is the skeleton of his *M. javanica*. I think this a mistake. Compare the skull with the skull of *M. javanica* figured by Rapp, which I am assured was taken out of the skin which he figures (which is the true *M. javanica* of this essay). I believe that the *M. javanica* of Sundevall is an Indian and not a Javan species; and it differs from the Indian species figured by Cuvier in the skull being shorter and broader, as mentioned above.

*** *Scales horn-coloured, pale; of the back, in eleven or thirteen longitudinal series. Tail as long as the body. Ears with only a slightly raised edge, without any distinct conch. Phatages.*

3. PHOLIDOTUS INDICUS.

Pale brown; scales striated at the base; tail more slender than the body, tapering to the end, as long as the body without the head; ears not prominent.

"Varies in the width of the tail and the curvature of the claw."—Sundevall.

Manis pentadactyla, Linn. S. N. i. 51; Gerrard, Cat. Bones B. M. 285 (partly); Gray, Cat. B. M. 188; Turner, P. Z. S. 1851, p. 219.

M. laticauda, Illiger; Sundevall, l. c. 259.

M. macroura, Desm. Mamm. 376.

M. brevicaudata, Tiedem. Zool. i. 497.

M. brachyura, Erxl. Syst. 98.

M. crassicaudata, Gray in Griff. A. K.; Rapp, Edent. 16.

Broad-tailed Manis, Penn.

Pangolin à courte queue, Cuv. Oss. Foss. v. t. 8 (skeleton).

Hab. Asia—India: Bengal, Madras, Pondicherry, Assam.

The skull in Cuvier's figure (Oss. Foss. v. t. 8. f. 2-4) is much more slender and less ventricose behind than the skulls of *M. dalmannii* in the British Museum. The face is represented as being about two-fifths the entire length of the head; and the nasal bones are narrower and longer.

In a fœtus in spirits in the British Museum, the eyelids are soft, the ears are only fringed with a slightly raised edge, and there are a few bristles projecting between the scales of the back.

Mr. MacClelland describes the *Manis brachyura* of Assam as having fifteen longitudinal series of scales, with bristles in pairs passing out between the scales. The lower part of the head and body and inside of the legs covered with coarse white hairs (Proc. Zool. Soc. 1839, p. 153). Is this *M. dalmannii*?

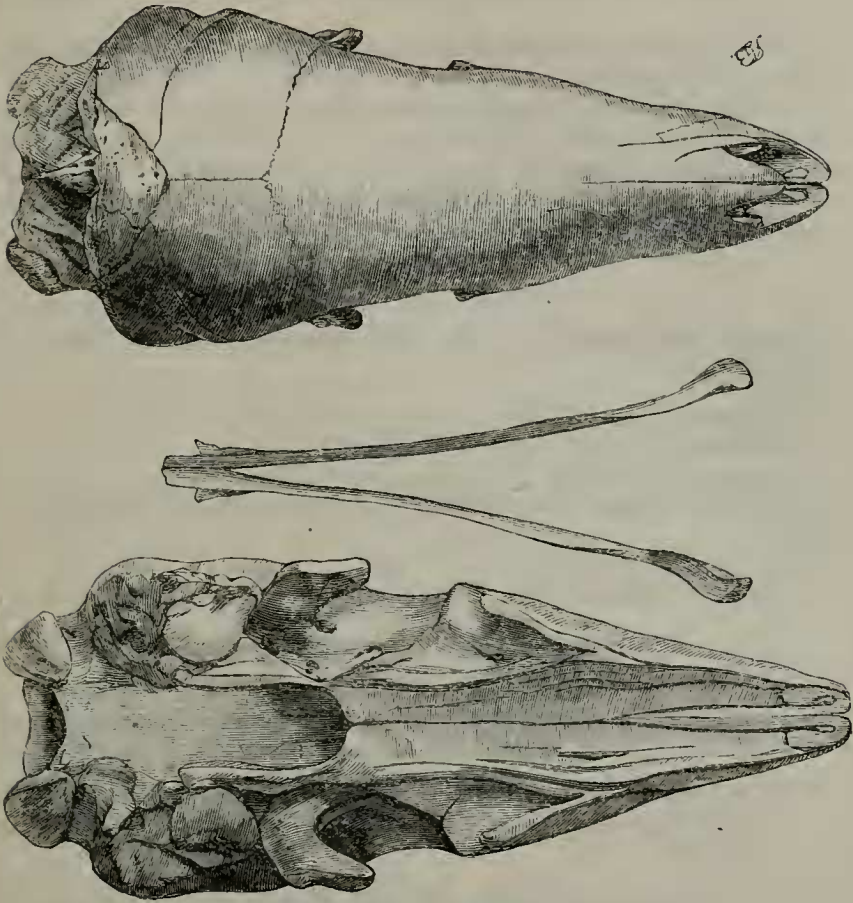
4. PHOLIDOTUS AFRICANUS. (Pl. XVII.)

B.M.

Pale brown; scales striated at the base; tail as long as the body, tapering to the end. Body and head 30, tail 25 inches.

Hab. West Africa, River Niger (*Dr. B. Baikie*).

Very like *P. indicus*; but the scales are larger, and the tail is longer.



Skull of *Pholidotus africanus*.

What is *Manis leptura*, Blyth, Journ. Asiat. Soc. of Bengal, xvi. ; Arch. f. Naturg. 1849 ; Rapp, Edent. 18 ?

3. SMUTSIA.

Upper part of the fore and hind feet covered with scales. Scales broad, short, and pale-coloured. Tail very broad, rounded at the end ; central series of scales interrupted before reaching the end of the tail.

SMUTSIA TEMMINCKII.

Scales striated, elongate ; of the middle series only on the base of the tail.

Manis temminckii, Smuts, Mamm. Cap. 54 ; Smith, Ill. S. Afr.

Zool. t. 7 (scales bad); Bennett, P. Z. S. 1834, p. 81; Turner, P. Z. S. 1851, p. 219; Gerrard, Cat. Bones B. M. 285; Sundevall, l. c. 260, t. 4. f. 2 (young skull and toe-bones); Peters, Reise n. Mossamb. i. 174, t. 32. f. 8 (os hyoides); Rapp, Edent. 17; Rüpp. Mus. Senck. iii. 179.

Hab. Eastern Africa, Sennaar, Caffraria, Kordofau (*Hedenborg*), Latakoo (*Steedman*).

Sundevall figures the skull of a very young specimen of this species. It is short, ventricose; the face broad, short, not half the length of the brain-case; the nasal bones are short, broad, wide behind; the lower jaw simple, without any process in the front of the upper edge (see Vet. Akad. Hand. 1842, t. 4. f. 34).

Fam. 2. DASYPODIDÆ.

Body covered with a bony convolute armour, formed of imbedded tesserae.

Dasypus, Linn., Cuvier.

Dasipina, Gray, Mamm. B. M. 189.

Dasypodidæ, Turner, P. Z. S. 1851, p. 211.

Fodientia, Illiger, Burmeister, Thiere Bras. 208; Giebel, Säugeth. 417.

Loricata, Vicq d'Az.

Osteology (see Cuv. Oss. Foss.; Turner, P. Z. S. 1851, p. 211).

Cuvier (Oss. Foss. v. 117. 1) divides the Armadillos into three groups according to the number of the toes:—

- I. Hind feet with four toes, the two central equal: *Dasypus novemcinctus*, Linn. = *Tatusia*, *D. tricinatus*, Linn. = *Tolypeutes*.
- II. The hind feet with five claws, one of the middle ones larger: *D. sexcinctus* = *Dasypus*, *Tatou pichey* and *Tatou velu* = *Euphractus*.
- III. The hind feet with five claws, the three outer ones very large: *D. unicinctus* = *Xenurus*; *Tatou géant* = *Prionodos*.

Cuvier observes, "The Armadillos with four toes have a short penis with a large three-lobed gland, and those with five toes a very long penis." The Apar (*D. tricinatus*), which is arranged with those having four claws, has five claws, and has a penis like those of that division.

These animals walk in three different manners, each having a particular conformation of the foot for the purpose.

The *Tatusiæ* are digitigrade.

The *Dasypodes* are plantigrade.

The *Tolypeutæ* walk on the tips of the front claws, and may be called unguligrade.

The differences in the form of the bones of the feet are described and figured in Cuvier's 'Oss. Foss.,' but he does not appear to have been aware of the differences in the habit and mode of walking.

Dr. Burmeister, in 'System. Uebers. der Thiere Brasiliens,' p. 276, 1854, divides the genus *Dasypus* of Linné into two subgenera—*Dasypus* and *Praopus*—the latter for *D. 9-cinctus* of Linnæus, and synonymous with the genus *Dasypus* as restricted by Wagler.

Tribe 1. **DASYPODINA.** The dorsal disk closely attached to the back of the animal, divided in the middle by free rings into scapular and pelvic shields; pelvic shield free from the pelvis.

1. Scapular and pelvic shields moderate; central rings several. Feet strong; hind toes free; claws large. Skull smooth above, and separate from the frontal shield. Tail elongate. *Peltochlamydes*.

A. Digitigrade. *The toes of the front and hind feet separate; claws conical, similar; palms and soles covered with shields, without any marked heel. Head elongate, ovate; forehead rounded; nose slender; ears close together, on the top of the head. Body subcylindrical. Chærochlamydes.*

These animals walk on their toes, and are very porcine in their character, as well as in the general form of the feet; the hinder part of the wrist and feet is covered with plates like the rest of the legs.

4. TATUSIA.

Central rings 5 to 8. Toes $4/5$, subequal, the two front and three hinder middle largest; inner and outer small; claws conical. Tail conical, elongate, annulated; lower rings of two or three series of plates. Cutting-teeth none; grinders $8/8$, moderate. *Osteology*, see Cuvier, Oss. Foss. v. t. 10; Turner, P. Z. S. 1851, p. 212.

Tatus, Gesner.

Tatusia, sp., F. Cuvier.

Dasypus, Wagler.

Dasypus 2 (*Tatusia*), Rapp, Edent. 8.

Praopus, Burmeister, Syst. Ueber. d. Thiere Brasil. i. 295, 1854; Arch. f. Naturg. 1862, 98.

The penis short, ending in a three-lobed gland (Cuvier, v. 118).

* *Face suddenly contracted; the nose subcylindrical; hinder part of palate rather narrow, flat, rounded on the sides. Tatusia.*

1. TATUSIA PEBA.

Ears one-third of the length of the head; shields smooth; under-side with scattered bristles; tail as long as the body.

Tatusia septemcincta, Gray, Cat. Mamm. B. M. 189; Gerrard, Cat. Bones B. M. 286; Turner, P. Z. S. 1851, p. 212.

Dasypus septemcinctus, Linn. Am. Acad. i. 281.

D. octocinctus, Schreb. Säugeth. t. 73.

D. novemcinctus, Linn. S. N. i. 54.

D. niger, Illiger.

D. peba, Desm.

D. longicaudus, P. M. Abbild. t. 83?

T. affinis, Lund.

D. peba, Desm. Mamm. 368; Owen, P. Z. S. 1831, p. 141; Krauss, Arch. für Naturg. 1862, p. 20, t. 3. f. (skull).

Praopus 7-cinctus, Burmeister, La Plata, 428.

Tatusia peba, Owen, Odont. t. 82. f. 2.

D. tatusia peba, Lesson; Rapp, Edent. 8.

Praopus longicaudatus, Burm. Thier. Bras. 298, 1854; Abhandl. Nat. Ges. zu Halle, 1861, p. 147.

Tatou noir, Azara; Cuvier, Oss. Foss. v. t. 10 (skeleton).

Cachicame, Buffon, H. N. x. 215, t. 57; Cuv. Oss. Foss. v. 124, t. 10 (shield).

? *Tatouële*, Buffon, H. N. x. 212.

Hab. Central and South America: Texas (*Baird*); Guiana (*Krauss*); Brazil (*Pr. Max.*); Paraguay (*Azara*).

"Texan Armadillo. The people of Matamoras esteem its flesh, and the women attribute imaginary properties to its shell. Living on the kitchen refuse. Nocturnal; burying flesh and vegetable substances for food."—*Baird*.

The head of the animal and the skulls in the Museum collection seem to increase in width, compared to the length, as the animal increases in age. The width of the head and skull does not depend on the sex; for we have broad-headed and narrow-headed males in the collection. The sides of the stuffed specimens are pale whitish, with black backs. The specimens vary in the size of the scapular disk. In one male in the Museum it appears much smaller than in most of the other specimens; but they all vary more or less in this character. The tail varies considerably in length, compared with the length of the body; but the shortest is as long as the body.

See also *Tatou verdadeiro*, Cuv. Oss. Foss. v. 118; Turner, P. Z. S. 1851, p. 213.

Dasypus uroceras, Lund, Dansk. Vedensk. Natur. Afh. viii. 65, 225; Rapp, Edent. 8.

Hab. Brazil (*M. de St.-Hilaire*).

Tail terminated by a horny sheath of one piece, the bands broader; plates of pelvic shield larger.

There is no specimen agreeing with the above description. May not the peculiarity of the tail be an accidental malformation?

Dr. Burmeister gives *Tatu verdadeiro* as one of the common Brazilian names of the species; and he gives *D. uroceras* as a synonym* of his *D. (Praopus) longicaudatus*.

* Dr. Peters, in the 'Monatsbericht' for 1864, p. 179, very shortly indicates, but gives no diagnostic characters nor descriptions of, *Dasypus pentadactylus*, *D. fenestratus*, and *D. novemcinctus*, var. *mexicanus*. The latter is probably the animal described by Dr. Spencer Baird. It is to be regretted that every zoologist who wishes to name a species does not append to it a diagnosis: in this respect the Scandinavian zoologists of Sweden and Denmark set a good example.

2. *TATUSIA HIRSUTA*.

Tail elongate, tapering; the head, body, limbs, and dorsal shield covered with elongated hairs; the head elongate; nose slender; ears large.

Praopus hirsutus, Burm. Abhandl. Nat. Ges. Halle, 1861, p. 147; Reise durch d. La Plata Staaten, 1861, p. 228; Arch. f. Naturg. 1862, p. 144.

D. hispidus, Burm. La Plata, ii. 428.

Hab. Guayaquil (Mus. Lima, *Burmeister*).

Length of head $4\frac{1}{2}$, body $11\frac{1}{4}$, and tail $10\frac{1}{2}$ inches. The rings and the plates of the shield are very indistinctly marked, indeed only shown at the shoulders and by slight folds on the lower part of the sides.

See also *Dasypus hispidus*, Burm. Thiere Brasiliens, i. 287.

Hab. Brazil; said to be distinct from *D. hirsutus*, Burm.

3. *TATUSIA HYBRIDA*.

Ears above one-fourth the length of the head; plates of the pelvic shield convex and elevated; tail about half or one-third the length of the body.

Dasypus hybridus, Desm. Mamm. 368; Martin, P. Z. S. 1837, p. 13 (anat.); Darwin, Voy. Beagle, i. 92.

Tatusia hybrida, Less. Mamm. 311; Turner, P. Z. S. 1851, p. 213.

D. (Tatusia) hybridus, Rapp, Edent. 9.

D. septemcinctus, Schreb. Säugeth. ii. 220, t. 72 & 76.

D. (Praopus) hybridus, Burm. La Plata, 428.

Tatou mulet, Azara.

Hab. Paraguay, very common; Rio Negro; North Patagonia.

** *Face attenuated; nose elongate, conical; hinder part of palate broad, concave, with raised edges on the side.* *Praopus*.

4. *TATUSIA KAPPLERI*.

Dasypus kappleri, Krauss, Arch. für Naturg. 1862, p. 24, t. 3. f. 1, 2 (skull).

D. (Praopus) peba, Burm.

Hab. Surinam (*Krauss*).

Carapace very much like *Tatusia peba*; but there are two series of claw-like plates, with free projecting ends, on the anterior side of the lower part of the hind legs; there are five plates in the upper series.

The skull is larger, and nose much more produced; the palate keeled on the sides in a line with the zygomatic arch.

In *D. peba* (l. c. t. 3. f. 3, 4) the palate is rounded on the sides, without any keel, and the nose shorter and more slender. Neither of the four skulls in the British Museum is near as large as the one figured by Dr. Krauss; but some of them have the palate keeled on the sides, more as in his figure of *T. kappleri* than as the palate is represented in the one he calls *T. peba*.

See also *Dasypus punctatus*, Lund.; *Tatusia*, sp., Turner, P. Z. S. 1851, p. 213.

Defined from a denuded skin in Mus. Coll. Surg.

- B. Plantigrade. *Palms and soles bald, callous, with a prominent heel. The toes of the fore feet united to the claws, compressed; claws compressed, sharp-edged beneath. Toes of hind feet separate; claws elongate, acute. Head broad; forehead flattened; nose short; ears far apart, on side of the head. Body depressed. Platyglamydes.*

The body is depressed, expanded, more or less covered with hair, which sometimes almost hides the tesserae of the shield. Legs short, strong; the whole of the feet applied to the ground in walking.

* *Head ovate; forehead convex; teeth numerous, small; intermaxillaries toothless. The first three or four rings of tesserae of the scapular rings partially free. Tail not ringed. The soles of the hind feet with tessera on the sides and behind.*

5. PRIONODOS.

The three or four front rings of the scapular shield deeply divided, free when young; central rings numerous. Tail not ringed, with the tesserae placed alternately. Plantigrade; soles of the feet partially covered with tesserae. Toes $5/5$; two inner front toes small; outer very small, rudimentary; second and third large; the third very large, with a very large claw. Skull broad; nose broad. Teeth $\frac{24-24}{24-24}$, small; intermaxillary toothless. *Osteology*, see Turner, P. Z. S. 1851, p. 215; Cuv. Oss. Foss. v. t. 11. f. 1, 3; Rapp, Edent. t. 11.

Prionodontes, F. Cuv.; Less. Man. 309; Turner, P. Z. S. 1851.

Priodonta, Gray, Cat. Mamm. B. M.

D. (Priodontes), Rapp, Edent. 10.

Cheloniscus, Wagler; Krauss.

The skeleton is figured by Rapp, Edent. t. 4 b. f. 1. The two inner toes of the fore feet elongate, slender, with small claws; the three others short; the third very stout, with a very large claw; the fourth similar, but smaller; the fifth or outer very small and short. The pelvis very broad behind; the second cervical vertebra elongate, with a very high superior central crest, and very rudimentary lateral processes.

PRIONODOS GIGAS. Tatou.

B.M.

Dasypus gigas, Cuv. Oss. Foss. v. 128, t. 11. f. 1, 5; Pr. Max. Beitr. ii. 516; Burm. Brasil. 277.

D. giganteus, Desm. Mamm. 368.

Priodonta gigas, Gray, Cat. Mamm. B. M. 120; Owen, Odont. t. 85. f. 1; Gerrard, Cat. Bones B. M. 287.

Priodontes gigas, Turner, l. c.; Gervais, Expéd. de F. Le Castelnau, Mamm. t. 18; Rapp, Edent. t. 4 b (skeleton).

P. giganteus, Less. Mamm. 309.

Cheloniscus gigas, Wagler; Krauss, Arch. f. Naturg. 1862, p. 19.

Kabalassou, Buffon, H. N. x. t. 41.

El Maximo, Azara.

Hab. Paraguay (*Azara*); Surinam (*Krauss*); Brazil (called "Tatu canastra").

** *Head flat, conical. Teeth few, nine or ten, large; intermaxillary bone with a tooth on each side behind. Tail shielded.*

6. DASYPUS.

Head broad, covered with large plates; a series of small shields under the eyes; frontal plate large, broad. Central rings six or eight. Two short bands of large equal plates, not so wide as the head, between the back of the head and the front edge of the scapular shields. Toes 5/5. Teeth $\frac{9-9}{10-10}$; the first upper in the intermaxillary.

Encoubert, Buffon; Cuv. Oss. Foss. v.; Rapp, t. 3, f. 4, 5.

Dasypus, Turner, P. Z. S. 1851, p. 214.

Dasypus (*Euphractus*), Burmeister, La Plata, ii. 1861.

Euphractus, Wagl.

Dasypus (1. *Dasypus*), Rapp, Edent. 7 (skull, t.).

* *Dorsal shield with two short hairs on the hinder margin of each tessera; under part of the body with scattered bristles.*

1. DASYPUS SEXCINCTUS.

B.M.

Dorsal shield bald, with two hairs on the hinder side of each of the dorsal tesseræ.

Dasypus sexcinctus, Linn. S. N. 154; Cuv. Oss. Foss. v. t. 11. f. 456; Gerrard, Cat. Bones B. M. 286; Burm. Thier. Bras. 290; Owen, Odont. t. 85. f. 3, 4; Gray, Cat. Mamm. B. M. 189; Turner, P. Z. S. 1851, p. 214; Rapp, Edent. 7, t. 3. f. 4, 5 (skull).

D. encoubert, Desm. Mamm. 370.

D. setosus, P. Max. ii. 520; Abh. Bras. t.

Encoubert, Cuv. Oss. Foss. v. t. 11. f. 4-6 (skull).

Dasypus villosus, Giebel, Zeitschrift, 1861, 93, t. 345. f. 1 (skull).

D. gilvipes, Illiger, Abh. Berl. Akad.

D. octodecim-cinctus, Erxl.

Hab. Brazil and Paraguay.

One of the young specimens in the British Museum has only four toes on the hind feet; but the outer toes on one foot appear to have been destroyed; and on the other foot there is a scale where the fifth ought to be placed. This may be the normal state of a different species.

The skull which Giebel figures as that of *D. villosus*, Burmeister, evidently belongs to this species.

** *Dorsal shield with numerous elongated bristles from the hinder edge of each tessera ; under part of body very hairy.*

2. *DASYPUS VELLEROSUS*, sp. nov. (Pl. XVIII.) B.M.

The forehead convex, with many polygonal shields ; the dorsal shield covered with abundant elongated bristly hairs ; the underside of the body covered with close hairs. Toes 5/5, the outer and inner hinder small.

Hab. Santa Cruz de la Sierra (*Bridges*).

* *Head broad, depressed ; nose very slender, broad, depressed ; intermaxillary toothless.*

7. *EUPHRACTUS*.

Head conical, covered with a shield of very many polygonal plates, with a tuft of hair under the eyes. Nape with a narrow short band of small plates. Dorsal disk very hairy, the first row of plates on the front of the scapular shield forming a free ring ; the lower marginal plates of the pelvic shield large, falcate. Tail conical, covered with rings of plates. Toes 5/5 ; claws acute, triangular, front largest. Skull broad, very depressed. Nose very slender, elongate ; intermaxillary bone toothless. Teeth $\frac{8-8}{9-9}$, moderate.

Dasypus (*Euphraetus*), partly, Burmeister.

Euphraetus, partly, Wagler.

Dasypus, sp., Turner, P. Z. S. 1851, p. 214.

Tatusia, sp., Burmeister.

* *Nose short, broad ; ears large.*

1. *EUPHRACTUS VILLOSUS*. Peludo. B.M.

Muzzle broad ; ears large ; forehead broad, covered with rugulose tubercular plates ; back covered with abundant long black hairs, more or less deciduous.

Dasypus villosus, Desm. Mamm. 370 ; Gerrard, Cat. Bones Mamm. 286 ; Turner, P. Z. S. 1851, p. 214.

Tatusia villosa, Lesson, Man. 312.

Dasypus (*Tatusia*) *villosus*, Rapp, Edent. 10.

D. (*Euphraetus*) *villosus*, Burmeister, La Plata, ii. 1861.

El Peludo, Azara, ii. 140.

Hab. Buenos Ayres, Pampas.

The skull which Giebel (*Zeitschrift*, 1861, t. 345. f. 1) figures under the name of *D. villosus* is evidently that of *D. sexcinctus*.

** *Nose slender, elongate ; ears small.*

2. *EUPHRACTUS MINUTUS*. Pichy. B.M.

Nose slender, elongate ; ears small ; forehead convex, covered with

irregular smooth polygonal plates. Back with scattered, elongate, slender, black or grey bristles.

Dasypus minutus, Desm. Mamm. 371; Turner, P. Z. S. 1851, p. 214.

D. patagonicus, Desm. N. Dict. H. N. xxx. 11. 491.

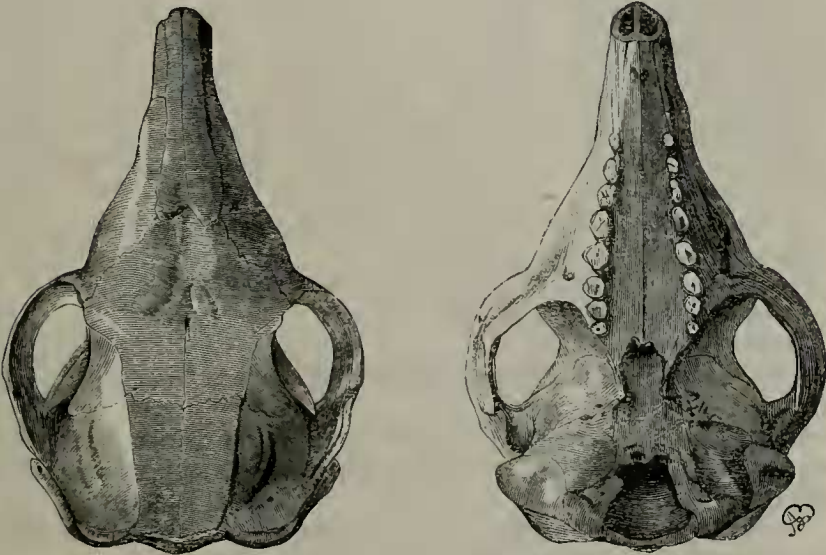
Tatusia minuta, Lesson, Man. 847; Gray, List Mamm. B. M. 190; Gerrard, Cat. Bones B. M. 286.

Dasypus (Euphractus) minutus, Burmeister, La Plata, ii. 427, 1861.

D. (Tatusia) minuta, Rapp, Edent. 10.

Tatou pichey, Azara.

Hab. Chili; La Plata.



Skull of *Euphractus minutus*.

"The four Chilian species of Armadillo (*Dasypus*) are nearly similar in habits. The Peludo (*D. villosus*) is nocturnal; while the others wander by day over the open plains, feeding on beetles, larvæ, roots, and even small snakes. The Pichy (*D. minutus*) prefers a very dry soil and the sandy dunes near the coast, where for many months it can never taste water. In soft soil the animal burrows so quickly that its hinder quarters would almost disappear before one could alight from one's horse."—*Darwin's Journ.* p. 96.

8. XENURUS.

Head elongate. Scapular and pelvic shields convex; central rings many, ten or eleven. Toes $5/5$. Tail nakedish, with a few imbedded tesseræ. Teeth $\frac{8-8}{9-9}$; intermaxillary teeth none. Skull elongate; brain-case constricted over the back of the orbit, swollen in front; forehead convex; nose conical, truncated.

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Cabassu, Buffon; Cuv. Oss. Foss. v. t. 11. f. 7, 9.

Xenurus, Wagler; Turner, P. Z. S. 1851, p. 215; Krauss.

The plates on the inner side of the two inner toes of the fore and hind feet are ciliated with a series of bristle-like hairs.

* *Nose of skull elongate, produced.* Tatoua.

1. *XENURUS UNICINCTUS.* Kabassu.

B.M.

Tail nakedish, with some scattered shields; those of the base of the tail immersed; becoming more abundant, closer, and more developed at the end, especially on the underside of the tip.

Dasypus unicinctus, Linn. S. N. i. 52.

D. gymnurus, Illiger; P. Max. Beitr. ii. 529.

D. tatouay, Desm. Mamm. 369; Tschudi, Faun. Peru, 206; Guérin, Icon. Mamm. t. 34. f. 2.

D. duodecim-cinctus, Schreb. Säugeth. 225, t. 75, 76.

Tatusia tatouay, Lesson, Man. 311.

D. multicincta, Thunb. Vet. Acad. Hand. 1818, 68, t. 1.

Xenurus unicinctus, Gray, Cat. Mamm. B. M. 120; Turner, P. Z. S. 1851, p. 215; Gerrard, Cat. Bones B. M. 285.

Dasypus xenurus et *D. 12-cinctus*, Krauss, Arch. Nat. 1862, p. 19.

Tatusia gymnura, Rapp, Edent. 9.

Cabassou, Cuv. Oss. Foss. v. 120, t. 11. f. 7-9 (skull).

Kabassou, Buff. H. N. x. 218, t. 40.

Tatou Tatouay, Azara.

Hab. Brazil, S^{ta} Catharina; Surinam (*Krauss*); Guiana; Peru; Paraguay.

In a young specimen, not in a good state in the British Museum, the plates of the dorsal shield are eroded, with a prominent ridge on each side.

See also—1. *Dasypus verrucosus*, Wagler, Seba, Thesaur. t. 30. f. 4; Cuvier, Oss. Foss. v. 120; Burm. Thier. Bras. 287.

2. *D. gymnurus*, P. Max. and Wagner. Appear like varieties or synonyma.

What is *Xenurus nudicaudus*, Lund, Turner, P. Z. S. 1851, p. 219, from "Tail shorter and more entirely naked" (Cuvier, Oss. Foss.)?

** *Nose of skull short, compressed.* *Xenurus.*

2. *XENURUS HISPIDUS.*

Skull short; nose short, compressed; nasal bones short.

Dasypus hispidus, Burmeister, Thiere Bras. i. 287; Giebel, Zeitschrift, 1861, p. 93, t. 2, 34. f. 3, 4 (skulls of old and young).

? *Tatu*, Seba, Thes. i. t. 30. f. 2, according to Burmeister.

Cabassu, Cuv. Oss. Foss. v. 120.

Hab. Brazil.

In our skulls of *X. unicinctus* the distance from the perforation under the orbit to the end of the intermaxillary is $1\frac{3}{4}$ inch; in Giebel's figure it is $1\frac{1}{2}$ inch.

I have not seen this species. The skull figured by Giebel is that

of a *Xenurus*, judging from the constriction of the brain over the orbit; but the face is very much shorter than in the skulls of *X. uncinatus* in the Museum Collection.

C. *The dorsal disk only united to the body by the centre of the back, free from the hairy skin on the sides. The scapular and pelvic shields large, convex, separated by three free central rings. Feet weak; front with elongated unequal claws, on the tips of which the animal walks; hind feet club-shaped, with flat ovate nails; palms and soles covered with plates. Tail short. Skull attached to the frontal shield by two or more bony prominences. Sphærochlamydes.*

The animal has the power of bending the body so as to form a nearly perfect sphere, the shield on the head and the short tubercular tail filling up the aperture occasioned by the notches in the scapular and pelvic shields. They walk on the small end of the elephant-like hind feet, and on the tips of the slender, elongated, middle claws of the fore feet.

9. TOLYPEUTES.

Head with a flat frontal shield, hinder edge prominent; ears granular. Scapular and pelvic shields large, convex; central rings three, free. Tail short, expanded at the base; end conical, covered with close tesserae; upper ones very convex. Toes 4 or 5, before and behind; inner and outer small; front claws unequal; two middle elongate, large. The hind feet small; toes indistinct, united; claws ovate, flat, nearly like the human nail. Skull elongate, slender; nose conical; intermaxillary toothless, with a bony prominence above each orbit for attaching the frontal shield. Teeth large. *Osteology*, Cuv. Oss. Foss. v. 123; Turner, P. Z. S. 1851, p. 215.

Apar, Geoff. Compt. Rend. 1847, xxiv. 572.

Cheloniscus, Fabr. Column.

Tolypeutes, Illiger, Prod. 1811.

The underside of the body covered with long bristly hairs; the outer plate of the moveable rings thin, with a frill of elongate rigid hairs on the outer edge. The bodies of the males are less ventricose and more elongate than in the female; the hair on the underside of the males is grey, in the females it is blackish; the male organ is very large and, when contracted, cylindrical and pendulous. They are very active, running with rapidity, but looking very insecure, on their slender limbs. They are called "Tatu bola" by the Brazilians.

* *Toes 5/5. Tail conical; base thick; end broad, flat, truncated; underside flattish. Frontal shield broad and arched above. Cheloniscus.*

1. TOLYPEUTES TRICINCTUS. *Apar*.

B.M.

Frontal shield flat, broad; the hinder margin not produced above

the head; regularly arched. Nape with three bony plates in front of the scapular shield. Front claws five; the inner and outer ones small; the middle one moderately large.

Dasypus tricinctus, Linn. S. N. i. 53; Schreb. Säugeth. 215, t. 71.

D. apar, Desm. Mamm. 367, t. 26. f. 3.

Tatusia apar, Lesson, Man. 310.

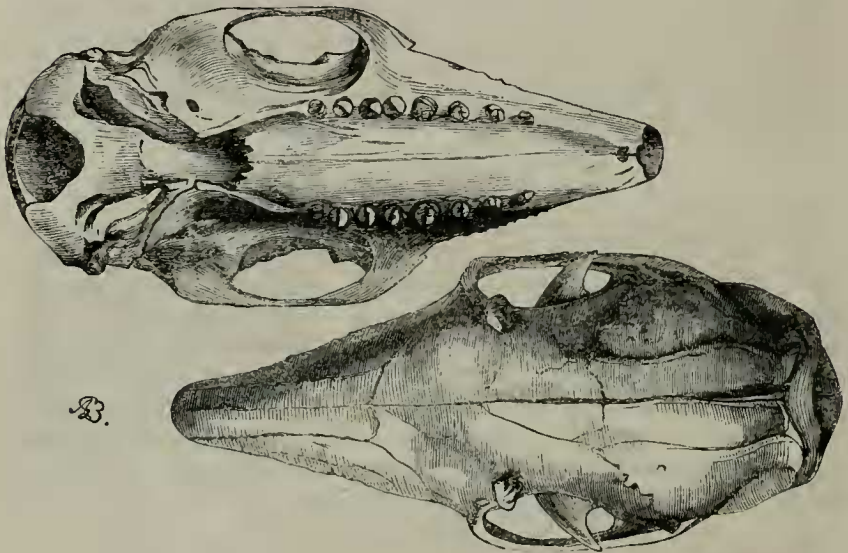
T. tricincta, Gray, Cat. Mamm. B. M. 181; Gerrard, Cat. Bones B. M. 286.

Tolypeutes tricinctus, Turner, P. Z. S. 1851, p. 215.

Dasypus (Tatusia) tricinctus, Rapp, Edent. 9.

Apar, Buffon, H. N. x. 206.

Hab. Bolivia; Buenos Ayres.



Skull of *Tolypeutes tricinctus*.

** Toes 4/5. Tail conical; base broadly expanded; end conical, rather compressed; under surface convex. Frontal shield narrow, produced above the head, and truncated behind. Nape without any plates. *Tolypeutes*.

2. *TOLYPEUTES CONURUS*. Mataco.

B.M.

Frontal shield flat, narrow, produced behind the head into a kind of hood, and truncated on the hinder edge. Nape without any tesseræ. Front claws four, the outer one small, the middle one very large and strong.

Dasypus (Tolypeutes) conurus, Is. Geoff. Compt. Rend. 1847; Rev. Zool. 1847, p. 135; Burmeister, d. La Plata, ii. 427; Giebel, Zeitschrift, 1861, p. 93, t. (skull).

Mataco, Azara, ii. 161.

Hab. South America, La Plata (*Burmeister*).

The specimen living in the Gardens of the Zoological Society, I have been informed by Mr. Bartlett and Dr. Peters, has only three front claws; all those in the British Museum have four, which appears to be the normal number. In other respects the animals are similar. The shell of the living animal is blackish brown. The skin between the central rings is brown, bald, and smooth. The animal sleeps rolled up with its head downwards.

The skull that Giebel (*Zeitschrift*, 1861, t. 234. f. 2) figures as that of *Dasypus conurus* may belong to this species; it is unlike the skull of *Tolypeutes tricinctus* in not having any tubercles over the orbits; but it is doubtful, as one of the skulls figured on these plates is wrongly determined, and the descriptions of the skeletons to which they belong, therefore, cannot belong to the species to which they are referred. The one named *D. villosus* is *D. sexcinctus*.

Tribe 3. CHLAMYDOPHORINA. The dorsal disk divided into two parts behind, forming an elongated dorsal and short pelvic shield; the latter is attached to the bones of the pelvis.

10. CHLAMYDOPHORUS.

The dorsal disk free beneath, only attached to the middle of the back. Pelvic shield and the tail covered with tesseræ. The sides of the back under the shield, the underside of the body, and limbs covered with silky hair. *Osteology*, Yarrell, Zool. Journ.; Turner, P. Z. S. 1851, p. 213; Gray, P. Z. S. 1857, p. 8 (fig. pelvis); Ann. N. H. xix. 1857, p. 492.

Chlamyphorus, Harlan; Rapp, Edent. 12.

Dasypus (*Chlamyphorus*), Fischer, Syn. 394.

Chlamyphorus, Gray; Burmeister.

CHLAMYDOPHORUS TRUNCATUS. Pichiciago. B.M.

Chlamyphorus truncatus, Harlan, Acad. Lyc. Nat. Hist. N. York, 1825, t. ; Burmeister, Reise La Plata, i. 297, ii. 429; Rapp, Edent. 22; Yarrell, Zool. Journ. iii. 544, 1837.

Chlamyphorus truncatus, Gray, P. Z. S. xxv. 1857, p. 9 (skeleton); Burmeister, Ann. & Mag. N. H. xi. (1863) 308.

Hab. Chili; Mendoza.

11. BURMEISTERIA.

The dorsal shield attached to the skin of the back to the edge. The pelvic disk and the tail only partly covered with tesseræ. The sides and under part of the body and limbs covered with woolly hair.

Clamydophorus, sp., Burmeister.

BURMEISTERIA RETUSA.

The plates of the dorsal shield with one or two bristles on the

hinder edge; those on the sides of the back with many bristles on the lower edge. The upper part of the pelvic disk with pencils of bristles.

Chlamyphorus retusus, Burmeister, Abh. Naturf. Ges. zu Halle, vii. 167, t. 1, 1863; Ann. & Mag. N. H. 1863, xi. 308.

Hab. Bolivia; Santa Cruz de la Sierra (*Burmeister*).

Larger than *Chlamydophorus truncatus*.

Division 2.

Body covered with hair or spines, not with armour.

Fam. 3. ORYCTEROPODIDÆ.

Body covered with bristles. Head conical; mouth large. Toes $4/5$; inner front wanting; three middle longest. Claws broad. *Osteology*, Cuvier, Oss. Foss. v. 139, t. 12; Turner, P. Z. S. 1851, p. 220; Rapp, Edent. t. 4; Sundevall, Kong. Vet. Akad. Hand. 1841, x. 236. t.

Myrmecophagina (partly), Gray, Cat. Mamm. B. M. 190.

Orycteropodidæ, Turner, *l. c.* 220.

Fodientia, Giebel, Säugeth. 412.

12. ORYCTEROPUS.

Character of family.

1. ORYCTEROPUS CAPENSIS. Aard Vark.

B.M.

Facial line nearly straight; the nose elongate, thick, scarcely attenuated.

Myrmecophagus capensis, Gmelin, S. N. i. 53.

M. afra, Pall. Misc. Zool. 64.

Orycteropus capensis, Geoff.; Desm. Mamm. 372; Gray, Cat. Mamm. B. M. 190; Gerrard, Cat. Bones B. M. 287; Smuts, Man. Cap. 52; Sundevall, *l. c.* 1841, p. 228; Owen, Odont. t. 76. f. 8, 9, 11, t. 77, 78; Rapp, Edent. 13, t. 1-4 (skull).

? *O. senegalensis*, Lesson, Man. 277; Duvernoy, Ann. Sci. Nat. xix. 192, t. 9, 1853.

Cochin de Terre Allemand, Buffon, H. N. v. t. 2; Camper, Act. Petrop. 1777, p. 222, t. 4. 6 (skull).

Orycterope, Cuv. Oss. Foss. v. t. 12 (skeleton).

Orycterope du Cap, Cuv. Oss. Foss. v. 117, t. 12 (skull).

Hab. South Africa, Cape of Good Hope.

2. ORYCTEROPUS ÆTHIOPICUS.

Forehead, before the eyes, shelving; the nose short, thin; the first front toe longer than the rest.

Orycteropus æthiopicus, Sundevall, Kong. V. Akad. Hand. 1841, p. 226, t. 3. f. 1-5; Rapp, Edent. 13.

Hab. Sennaar (*Hedenborg*).

Fam. 4. MYRMECOPHAGIDÆ.

Body covered with hair. Head conical, elongate ; mouth small.

Edentata genuina, Cuvier, Oss. Foss. v. 97.

Myrmecophagidæ, Turner, *l. c.* 217.

Myrmecophagina, Gray, Cat. Mamm. B. M. 190.

Myrmecophaga, Linn. S. N. i. 52.

Lipodonta, Nitzsch.

Vermilingua, Ill. Prodr.

The ribs of the animals of this family are flat and more or less dilated on the outer side ; they are most dilated in the *Cyclothuri*, where they are expanded nearly their whole length, and so much so that they overlap each other, and form a complete armour to the thoracic viscera. The figure given by Rapp agrees with the skeletons in the British Museum. The ribs of the skeleton of *Myrmecophaga*, figured by Cuvier (Oss. Foss. v. t. 9) and Rapp (*Edentata*, t. 6), are only dilated on the middle of the outer side, and not there to such an extent as in the above-named genus.

* Terrestrial. Tail bushy ; walking on side of feet, with claws curved up.

13. MYRMECOPHAGA.

Toes 4/5. Palatine and pterygoid bones united beneath the nasal canal for its whole length. Fur of body and tail elongate, flaccid. Tail very bushy, lax. Skull very long, very slender ; nose very slender, much longer than the brain-case.

Terrestrial, living solitary in marshes. *Osteology*, Cuvier, Oss. Foss. v. 97, t. 9 ; Rapp, t. 46.

MYRMECOPHAGA JUBATA.

Fur blackish grey, mixed ; hind limbs and a mark running obliquely from the shoulders upwards and backwards black.

Myrmecophaga jubata, Linn. S. N. i. 52 ; Gerrard, Cat. Bones B. M. 288 ; Rapp, Edent. 14. t. 46 (skull).

M. tridactyla, Linn. S. N. ed. 10, p. 35.

M. sciurea, Pallas, Misc. 65.

Tamanoir, Buffon, H. N. x. 144, t. 29 ; Supp. iii. t. 55 ; Cuvier, Oss. Foss. v. 97, t. 9.

Great Ant-eater, Penn.

Hab. South America, La Plata.

Anatomy, see Owen, P. Z. S. 1837, p. 22 ; Ann. & Mag. N. H. xix. 59 ; Trans. Zool. Soc. iv. 117 ; Rapp, Edent. t. 46 (skeleton) ; Cuvier, Oss. Foss. v. t. 9 (skeleton).

** Arboreal. Tail conical, prehensile ; feet clasping the branches.

14. TAMANDUA.

Toes 5/4. Palatine and pterygoid bones united beneath the nasal

canal for the whole length. Fur of body and tail short, bristly. Tail tapering, prehensile. Skull long, slender; nose nearly as long as brain-case (Rapp, t. 5).

Living on trees.

Penis (figured by Rapp, Edent. t. 6. f. 4) is elongate, cylindrical, rather tapering, covered with rings of acute tubercles and with a globular gland.

1. TAMANDUA BIVITTATA. Collared Tamandua. B.M.

Head, shoulders, fore limbs, outside of hind limbs, and middle of the tail white; a stripe from each side of the neck over the shoulder and remaining part black. "Tail but little longer than the body; its terminal third scaly."—Turner.

Var. Black less intense.

Myrmecophaga tridactyla, Linn. S. N. 51.

M. tetradactyla, Linn. S. N. 52; Rapp, Edent. 14, t. 3 b, t. 5 (skull).

M. tamandua, Cuv.; Desm. Mamm. 374; Blainv. Ostéogr. t. (skeleton).

Tamandua tetradactyla, Lesson; Gray, Cat. Mamm. B. M. 191; Gerrard, Cat. Bones B. M. 288; Turner, P. Z. S. 1851, p. 218; Desm. N. Dict. H. N. xii. 107.

M. bivittata, Desm. N. Dict. H. N. xii. 107.

M. nigra, Geoff.; Desm. N. Dict. H. N. xii. 107.

M. myosura, Pallas, Miscell. 64.

M. ursina, Griff. A. K. 16.

M. crispus, Rüpp. Mus. Senck. iii. 179.

Tamandua, Buffon, H. N. x. 144; Cuvier. Oss. Foss. v. 101.

Middle Ant-eater, Penn.

Hab. Brazil; Paraguay.

Myrmecophaga annulata (Desm. Mamm. 374, from Krusenstern, Voyage, t. fig., altered Griffith, A. K. t. 144) and *M. annulata* et *M. striata* (Shaw, from Buff. H. N. Supp. iii. t. 56) are only a *Coati* (*Nasua*) disfigured.

2. TAMANDUA LONGICAUDATA. Yellow Tamandua. B.M.

Uniform light ochraceous, with a paler vertebral line; tail nearly double the length of the body, its terminal half covered with small scales and a few scattered black hairs; ears large, rounded, about one-third the length of the head; no shoulder-streak.

Myrmecophaga longicaudata, Wagner; Turner, P. Z. S. 1851, p. 218; Burm. Thier. Bras. 304.

Hab. —? (B. M. and Zool. Soc.).

15. CYCLOTHURUS.

Toes $2\frac{5}{5}$; the outer front one much the largest. Pterygoid bones meeting, presenting two long, parallel, and little prominent crests, and much extended backward, and not forming a canal. Skull short,

broad; nose moderate, slender, shorter than the brain-case. The ribs are very broad, dilated, forming a solid armour to the chest, and overlapping each other (see Rapp, t. 5. f. 3, 4, 5).

Cyclothurus, Gray, Cat. Mamm. B. M.; Turner, P. Z. S. 1851, p. 218.

CYCLOTHURUS DIDACTYLUS.

B.M.

Fulvous back, blackish-washed; feet and tail grey, longer hairs with minute black tips.

Myrmecophaga didactyla, Linn. S. N. i. 51; Rapp, Edent. 15, t. 5. f. 3-6 (skull); Blainv. Ostéogr. t. (skeleton).

M. minima, Brisson, R. A. 28.

Cyclothurus didactylus, Lesson; Gray, Cat. Mamm. B. M. 191.

Little Ant-eater, Edw. Glean. i. 220, t. 220.

Fourmoulier à deux doigts, Cuv. Oss. Foss. v. 103.

Hab. South America, Brazils.

CYCLOTHURUS DORSALIS. (Pl. XIX.)

B.M.

Golden yellow, silky, back with a broad, well-defined black stripe; feet and tail yellow.

Hab. Costa Rica (*Salvin*).

The back and sometimes the sides are washed with blackish. Always known by the distinct, well-defined, broad dorsal streak, and the yellow colour of the feet and tail.

Fam. 5. ORNITHORHYNCHIDÆ.

Body covered with hair or spines. Mouth in the form of a flat, depressed, or slender beak, subcylindrical. Hind feet of the male spurred.

Skeleton with marsupial bone, and a merrythought (*furcula*) like that of birds.

Monotrema, Geoff.

Replantia, Illiger.

16. PLATYPUS.

Beak depressed. Body covered with hair. Tail broad, short, depressed. Feet very short. Toes 5/5; front toes united by a web. Hind feet with an acute spur on inner side.

Platypus, Shaw, Viv. Nat. 1799.

Ornithorhynchus, Blumenbach, Handb. 135, 1800.

Ornithorhynque, Cuv. Oss. Foss. t. 14.

Demipus, Wiedem. Zool. Arch. i. 175.

PLATYPUS ANATINUS.

Platypus anatinus, Shaw, Nat. Misc. t. 385; Gen. Zool. i. 229, t. 66, 67, 1799; Gerrard, Cat. Bones B. M. 288.

Demipus anatinus, Wiedm. Zool. Arch. i. 175, t.

Ornithorhynchus paradoxus, Blumenb. Handb. ed. 10, p. 135; Abbild. t. 41, 1800; Home, Phil. Trans. 1802, p. 87.

- O. anatinus*, Gould, Mamm. Austr. i. t. 1.
O. brevirostris, Ogilby, P. Z. S. 1831, p. 150.
O. rufus, Leach, Zool. Misc. 136.
O. fuscus, Leach, Zool. Misc. ii. 136, t. 111.
O. crispus et *O. lævis*, Macgillivray, Mem. Wern. Soc. v. 127.
Duck-billed Platypus, Shaw.
Ornithorhynche, Cuv. Oss. Foss. v. 143, t. 14 (skeleton).
Hab. South-eastern Australia and Van Diemen's Land.

17. ECHIDNA.

Beak elongate, cylindrical, attenuated. Mouth small, terminal. Tongue very long. Body covered with spines. Tail very short
Osteology, Cuv. Oss. Foss. t. 13 (shield).

- Echidna*, Cuv. Tabl. Elém. 143, 1797.
Tachyglossus, Illiger, Prod. 1811.
Ornithorhynchus, sp., Home.
Myrmecophaga, sp., Shaw.

ECHIDNA ACULEATA.

- Echidna australiensis*, Less. Man. 318.
E. hystrix, Cuv. R. A. i. 226; Leach, Zool. Misc. ii. t. 90; Gould, Mamm. Austr. i. t. 2; Gerrard, Cat. Bones B. M. 288.
E. longiaculeata, Tiedem. Zool. i. 592.
Myrmecophaga aculeata, Shaw, Nat. Misc. t. 109, 1792.
Tachyglossus aculeatus, Illig.; Schreb. Säugeth. t. 63 B.
T. hystrix, Wagner; Schreb. Säugeth. iv. 242.
Ornithorhynchus hystrix, Home, Phil. Trans. 1802, p. 348.
Porcupine Anteater, Shaw.
Echidne, Cuvier, Oss. Foss. v. 144, 613 (skeleton).
Hab. Australia.

Var. More hairy.

- Echidna setosa*, Cuv. R. A. i. 226; Gould, Mamm. Austr. i. t. 3.
E. brevicaudata, Tiedemann, Zool. i. 392.
Tachyglossus setosus, Illiger; Schreb. Säugeth. t. 63.
Hab. Van Diemen's Land.

5. ON THE STRUCTURE OF THE STOMACH IN DESMODUS RUFUS.
BY PROF. T. H. HUXLEY, F.R.S., V.P.Z.S.

According to Cuvier (*Leçons*, ed. 2, t. iv. pt. ii. p. 31), the Cheiroptera exhibit three principal forms of stomach, which are related to their varied food. There is the transversely elongated tubular stomach possessed by those Cheiroptera which live on fruit; the globular stomach, with closely approximated cardiac and pyloric orifices, exhibited by the specially insectivorous Bats; and the longitudinally elongated, conical stomach, with a pyloric cæcum, found in those Bats which suck the blood of other animals. By way of commen-